Listing of the Claims

1-56. (Cancelled).

57. (Currently Amended) A device for promoting regeneration of an injured nerve, comprising:

a nerve encasement structure; and

a plurality of biodegradable guiding ~~units~~fibers,

wherein the material of the nerve encasement structure and the material of the guiding fibers each comprises at least one biodegradable polymer, wherein said at least one polymer comprised in the material of the guiding fibers presents an average molecular weight which is lower than a molecular weight of said at least one polymer comprised in the material of the nerve encasement structure, wherein the material of the nerve encasement structure comprises polyhydroxybutyrate (PHB) and the material of the guiding fibers comprises PHB and the PHB average molecular weight of the nerve encasement structure is within the range of 100,000 to 250,000 daltons and the PHB average molecular weight of the guiding fibers is within the range of 50,000 to < 250,000 daltons, and

wherein at least a majority of the guiding fibers~~units~~ present an in vivo degradation time (t_1) being less than ~~a~~ the time t_c required for establishing regenerated contact between ends of an injured nerve (t_c) using the device for said regeneration, wherein

$$t_1 < 14 + \frac{L}{v}; \text{ and}$$

$$\frac{L}{v} \leq t_c \leq 14 + \frac{L}{v},$$

where

L is the nerve gap [mm] of the injured nerve, and

v is the axon growth rate [mm/day] of the injured nerve, typically 0.5-2 mm/day.

58. (Currently Amended) ~~A~~ The device according to claim 57, wherein at least a major part of the nerve encasement structure presents an in vivo degradation time t_2 ~~being~~ longer than t_1.

59. (Currently Amended) ~~A~~ The device according to claim 58, wherein t_2 is longer than a time t_r required for the entire nerve regeneration process to be completed, wherein

$t_2 > t_1$;

$t_2 > 2\left(\frac{L}{v}\right)$; and

$2\left(\frac{L}{v}\right) \leq t_r \leq 14 + 2\left(\frac{L}{v}\right)$.

60. (Currently Amended) A device for promoting regeneration of an injured nerve comprising:

a ~~biodegradable~~ nerve encasement structure; and

a plurality of biodegradable guiding fibers~~units~~,

wherein the material of the nerve encasement structure and the material of the guiding fibers each comprises at least one biodegradable polymer, wherein said at least one polymer comprised in the material of the guiding fibers presents an average molecular weight which is lower than a molecular weight of said at least one polymer comprised in the material of the nerve encasement structure, wherein the material of the nerve encasement structure comprises polyhydroxybutyrate (PHB) and the material of the guiding fibers comprises PHB and the PHB average molecular weight of the nerve encasement structure is within the range of 100,000 to 250,000 daltons and the PHB average molecular weight of the guiding fibers is within the range of 50,000 to < 250,000 daltons, and

wherein at least a majority of the guiding ~~units~~ fibers present an in vivo degradation time (t_{1}), wherein at least a major part of the nerve encasement structure presents an in vivo degradation time (t_{2}), wherein t_2 ~~being~~ is longer than t_1 and is longer than ~~a~~ the time ~~t_r~~ required for the entire nerve

regeneration process to be completed (t_r), and wherein t_1 ~~being~~ is less than t_r, and wherein

$t_1 < 14 + 2\left(\frac{L}{v}\right)$;

$t_2 > 2\left(\frac{L}{v}\right)$; and

$2\left(\frac{L}{v}\right) \leq t_c \leq 14 + 2\left(\frac{L}{v}\right)$;

in which

L is the nerve gap [mm] of the injured nerve, and

v is the axon growth rate [mm/day] of the injured nerve, typically 0.5-2 mm/day.

61. (Currently Amended) ~~A~~ The device according to claim 60, wherein t_1 is less than a time t_c required for establishing regenerated contact between the ends of an injured nerve using the device for said regeneration, and wherein

$t_1 < 14 + \frac{L}{v}$; and

$\frac{L}{v} \leq t_0 \leq 14 + \frac{L}{v}$.

62-70. (Cancelled).

71. (Currently Amended) ~~A~~ The device according to claim 57, wherein the nerve encasement structure comprises a compressed non-woven sheet of biodegradable fibers~~fibres~~ having an essentially unidirectional ~~fibre~~ fiber orientation.

72. (Currently Amended) ~~A~~ The device according to claim 57, wherein the plurality of guiding ~~units~~fibers are ~~biodegradable fibres~~ in the form of a non-bonded ~~fibre~~ fiber web having an essentially unidirectional ~~fibre~~ fiber orientation.

73. (Currently Amended) ~~A~~ The device according to claim 57, further comprising a hydrogel matrix.

74. (Currently Amended) ~~A~~ The device according to claim 57, further comprising at least one biologically active substance or cell.

75. (Currently Amended) ~~A~~ The device according to claim 74, wherein said at least one biologically active substance comprises a nerve growth promoting substance selected from the group consisting of nerve growth factor (NGF); brain-derived neurotrophic factor (BDNF); neurotrophin-3 (NT-3); neurotrophin-4 (NT-4); glial growth factor (GGF); insulin-like growth factor (IGF); platelet-derived growth factor (PDGF); fibroblast growth factor (FGF); transforming growth factor (TGF); and epidermal growth factor (EGF).

76. (Currently Amended) ~~A~~ The device according to claim 74, wherein said at least one biologically active cell is selected from the group consisting of endothelial cells; fibroblasts; Schwann cells; olfactory ensheathing cells; stem cells or precursor cells thereof.

77. (Currently Amended) ~~A~~ The device according to claim 57, wherein a guiding ~~unit~~ fiber occupies ≤ 2.0% by volume of the lumen formed by the nerve encasement structure.

78. (Currently Amended) ~~A~~ The device according to claim 57, wherein each guiding ~~unit~~ fiber of a majority of the guiding ~~units~~ fibers has a cross-sectional dimension ≤ 50 μm.

79. (Currently Amended) ~~A~~ The device according to claim 78, wherein each guiding ~~unit~~ fiber of a majority of the guiding ~~units~~ fibers has a cross-sectional dimension ≤ 20 μm.

80. (Currently Amended) ~~A~~ The device according to claim 79, wherein each guiding ~~unit~~ fiber of a majority of the guiding ~~units~~ fibers has a cross-sectional dimension within the range of ~~from~~ 5 to 15 μm.

81. (Currently Amended) A kit for preparing a device for promoting regeneration of an injured nerve, said kit comprising:

a sheet; and

a plurality of biodegradable guiding ~~units~~fibers,

wherein the material of the sheet and the material of the guiding fibers each comprises at least one biodegradable polymer, wherein said at least one polymer comprised in the material of the guiding fibers presents an average molecular weight which is lower than a molecular weight of said at least one polymer comprised in the material of the sheet, wherein the material of the sheet comprises polyhydroxybutyrate (PHB) and the material of the guiding fibers comprises PHB and the PHB average molecular weight of the sheet is within the range of 100,000 to 250,000 daltons and the PHB average molecular weight of the guiding fibers is within the range of 50,000 to < 250,000 daltons, and

wherein at least a majority of the guiding ~~units~~ fibers present an in vivo degradation time (t_{1i}) ~~being~~ less than ~~a~~the time ~~t_c~~ required for establishing regenerated contact between the ends of an injured nerve (t_c) using the device for said regeneration; wherein

$$t_1 < 14 + \frac{L}{v}\text{; and}$$

$$\frac{L}{v} \leq t_c \leq 14 + \frac{L}{v};$$

where

L is the nerve gap [mm] of the injured nerve, and

v is the axon growth rate [mm/day] of the injured nerve, typically 0.5-2 mm/day.

82. (Currently Amended) ~~A~~ The kit according to claim 81, wherein the sheet presents an in vivo degradation time (t_2) being longer than the in vivo degradation time (t_1).

83. (Currently Amended) A kit for preparing a device for promoting regeneration of an injured nerve, said kit comprising:

a biodegradable sheet; and

a plurality of biodegradable guiding ~~units~~fibers,

wherein the material of the sheet and the material of the guiding fibers each comprises at least one biodegradable polymer, wherein said at least one polymer comprised in the material of the guiding fibers presents an average molecular weight which is lower than a molecular weight of said at least one polymer comprised in the material of the sheet, wherein the material of the sheet comprises polyhydroxybutyrate (PHB) and the material of the guiding fibers comprises PHB and the PHB average molecular weight of the sheet is within the range of 100,000 to 250,000 daltons and the PHB average molecular weight of the guiding fibers is within the range of 50,000 to < 250,000 daltons, and

wherein at least a majority of the guiding ~~units~~ fibers present an in vivo degradation times (t_1), wherein at least a major part of the sheet presents an in vivo degradation time (t_2), wherein t_2 ~~being~~is longer than t_1 and is longer than ~~a~~the time ~~t_r~~ required for the entire nerve regeneration process to be completed (t_r), and wherein t_1 ~~being~~is less than t_r; wherein

$$t_1 < 14 + 2\left(\frac{L}{v}\right);$$

$$t_2 > 2\left(\frac{L}{v}\right); \text{ and}$$

$$2\left(\frac{L}{v}\right) \leq t_r \leq 14 + 2\left(\frac{L}{v}\right),$$

where

L is the nerve gap [mm] of the injured nerve, and

v is the axon growth rate [mm/day] of the injured nerve, typically 0.5-2 mm/day.

84-92. (Cancelled).

93. (Currently Amended) The~~A~~ kit according to claim 81, wherein the sheet comprises a compressed non-woven sheet of biodegradable ~~fibres~~ fibers having an essentially unidirectional ~~fibre~~ fiber orientation.

94. (Currently Amended) The~~A~~ kit according to claim 81, wherein the plurality of guiding ~~units~~ fibers are ~~biodegradable fibres~~ in the form of a non-bonded ~~fibre~~ fiber web having an essentially unidirectional ~~fibre~~ fiber orientation.

95. (Currently Amended) The~~A~~ kit according to claim 81, further comprising a hydrogel material.

96. (Currently Amended) The~~A~~ kit according to claim 95, wherein the hydrogel is in a dehydrated state.

97. (Currently Amended) The~~A~~ kit according to claim 81, further comprising at least one biologically active substance or cell.

98. (Currently Amended) The~~A~~ kit according to claim 97, wherein said at least one biologically active substance comprises a nerve growth promoting substance selected from the group consisting of nerve growth factor (NGF); brain-derived neurotrophic factor (BDNF); neurotrophin-3 (NT-3); neurotrophin-4 (NT-4); glial growth factor (GGF); insulin-like growth factor (IGF); platelet-derived growth factor (PDGF); fibroblast growth factor (FGF); transforming growth factor (TGF); and epidermal growth factor (EGF).

99. (Currently Amended) The~~A~~ kit according to claim 97, wherein said at least one biologically active cell is selected from the group consisting of endothelial cells; fibroblasts; Schwann cells; olfactory ensheathing cells; stem cells or precursor cells thereof.

100. (Currently Amended) A biodegradable sheet for preparing a device for promoting regeneration of an injured nerve, comprising:

at least one surface at least partly coated with a dehydrated hydrogel material; and

a plurality of biodegradable guiding ~~units~~fibers,

wherein the material of the at least one surface and the material of the guiding fibers each comprises at least one biodegradable polymer, wherein said at least one polymer comprised in the material of the guiding fibers presents an average molecular weight which is lower than a molecular weight of said at least one polymer comprised in the material of the at least one surface, wherein the material of the at least one surface comprises polyhydroxybutyrate (PHB) and the material of the guiding fibers comprises PHB and the PHB average molecular weight of the at least one surface is within the range of 100,000 to 250,000 daltons and the PHB average molecular weight of the guiding fibers is within the range of 50,000 to < 250,000 daltons, and

wherein at least a majority of the guiding ~~units~~ fibers presents an in vivo degradation time $[t_{1}]$ being less than ~~a~~the time ~~t_c~~ required for establishing regenerated contact between the ends of an injured nerve (t_c) using said device; wherein

$$t_1 < 14 + \frac{L}{v}; \text{ and}$$

$$\frac{L}{v} \leq t_c \leq 14 + \frac{L}{v},$$

where

L is the nerve gap [mm] of the injured nerve, and

v is the axon growth rate [mm/day] of the injured nerve, typically 0.5-2 mm/day.

101. (Currently Amended) A biodegradable sheet for preparing a device for promoting regeneration of an injured nerve, comprising:

at least one surface at least partly coated with a dehydrated hydrogel material; and

a plurality of biodegradable guiding ~~units~~fibers,

wherein the material of the at least one surface and the material of the guiding fibers each comprises at least one biodegradable polymer, wherein said at least one polymer comprised in the material of the guiding fibers presents an average molecular weight which is lower than a molecular weight of said at least one polymer comprised in the material of the at least one surface, wherein the material of the at least one surface comprises polyhydroxybutyrate (PHB) and the material of the guiding fibers comprises PHB and the PHB average molecular weight of the at least one surface is within the range of 100,000 to 250,000 daltons and the PHB average molecular weight of the guiding fibers is within the range of 50,000 to < 250,000 daltons, and

wherein at least a majority of the guiding ~~units~~ fibers presents an in vivo degradation time (t_1), wherein at least a major part of the sheet presents an in vivo degradation time (t_2), wherein t_2 ~~being~~is longer than t_1 and is longer than ~~a~~the time ~~t_r~~ required for the entire nerve regeneration process to be completed (t_r), and wherein t_1 ~~being~~is less than t_r; wherein

$$t_1 < 14 + 2\left(\frac{L}{v}\right);$$

$$t_2 > 2\left(\frac{L}{v}\right); \text{ and}$$

$$2\left(\frac{L}{v}\right) \leq t_r \leq 14 + 2\left(\frac{L}{v}\right),$$

where

L is the nerve gap [mm] of the injured nerve, and

v is the axon growth rate [mm/day] of the injured nerve, typically 0.5-2 mm/day.

102. (Cancelled).

103. (Currently Amended) The~~A~~ biodegradable sheet according to claim 100, said dehydrated hydrogel material further comprising at least one biologically active substance or cell.

104-112. (Cancelled).

*** END CLAIM LISTING ***